

*Final*

Record of Decision

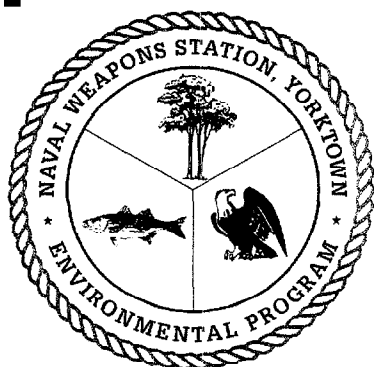
Operable Unit No. 1

Site 5

Surplus Transformer Storage Area

Naval Weapons Station Yorktown  
Yorktown, Virginia

*September 1994*



## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>ABBREVIATIONS AND ACRONYMS .....</b>	<b>iv</b>
<b>DECLARATION FOR THE RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION .....</b>	<b>A-1</b>
<b>1.0 INTRODUCTION .....</b>	<b>1-1</b>
<b>2.0 SITE NAME, LOCATION, AND DESCRIPTION .....</b>	<b>2-1</b>
<b>3.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES .....</b>	<b>3-1</b>
<b>4.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION .....</b>	<b>4-1</b>
<b>5.0 SCOPE AND ROLE OF THE OPERABLE UNIT RESPONSE ACTION .....</b>	<b>5-1</b>
<b>6.0 SITE CHARACTERISTICS .....</b>	<b>6-1</b>
6.1 Land Use .....	6-1
6.2 Meteorology .....	6-1
6.3 Topography .....	6-1
6.4 Geology and Hydrogeology .....	6-2
6.5 Ecology .....	6-2
<b>7.0 SUMMARY OF SITE RISKS .....</b>	<b>7-1</b>
7.1 Fate and Transport .....	7-1
7.2 Toxicity and Exposure Assessment .....	7-2
7.3 Risk Characterization .....	7-3
7.4 Conclusion .....	7-4
<b>8.0 DESCRIPTION OF THE “NO ACTION” ALTERNATIVE .....</b>	<b>8-1</b>
<b>9.0 RESPONSIVENESS SUMMARY .....</b>	<b>9-1</b>
9.1 Selected Newspaper Notices .....	9-2
9.2 Public Meeting Attendance Roster .....	9-4
9.3 Panel of Experts .....	9-5
9.4 Independent Sampling Investigation .....	9-6
<b>10.0 REFERENCES .....</b>	<b>10-1</b>

## LIST OF FIGURES

<u>Number</u>		<u>Page</u>
2-1	Location of Naval Weapons Station .....	2-2
2-2	Location of Site 5 - Surplus Transformer Storage Area .....	2-3
3-1	Previous Surface Soil Sample Locations (Site 5 - Surplus Transformer Storage Area)	3-4
3-2	Round One Remedial Investigation Surface Soil, Concrete Chip, Soil Boring, and HydroPunch™ Sampling Locations (Site 5 - Surplus Transformer Storage Area) ...	3-5

## LIST OF TABLES

<u>Number</u>		<u>Page</u>
3-1	Soil Analytical Results of Previous Investigations at Site 5 .....	3-2
3-2	Soil Analytical Results of Round One Remedial Investigation at Site 5 .....	3-6

## ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CLP	Contract Laboratory Program
COPC	Chemical of Potential Concern
CSF	Carcinogenic Slope Factor
DoN	Department of the Navy
FS	Feasibility Study
FFA	Federal Facilities Agreement
°F	degree Fahrenheit
HI	Hazard Index
IAS	Initial Assessment Study
ICR	Incremental Cancer Risk
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
MI	Mobility Index
msl	Mean Sea Level
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPL	National Priorities List
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PRAP	Proposed Remedial Action Plan
RBC	Risk Based Concentration
RCRA	Resource Conservation Recovery Act
RfD	Reference Dose
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SOW	Statement of Work

TAL	Target Analyte List
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency
WPNSTA Yorktown	Naval Weapons Station, Yorktown
µg/kg	Microgram Per Kilogram

## **DECLARATION FOR THE RECORD OF DECISION REMEDIAL ALTERNATIVE SELECTION**

### **Site Name and Location**

Operable Unit No. I  
Site 5, Surplus Transformer Storage Area  
Naval Weapons Station  
Yorktown, Virginia

### **Statement of Basis and Purpose**

This decision document presents a determination that no remedial action is necessary to protect human health and the environment for Operable Unit No. I, the Surplus Transformer Storage Area, Site 5, at the Naval Weapons Station, Yorktown, Virginia (WPNSTA Yorktown). This determination was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). This no action decision is supported by documents contained in the Administrative Record.

The Commonwealth of Virginia concurs on this action.

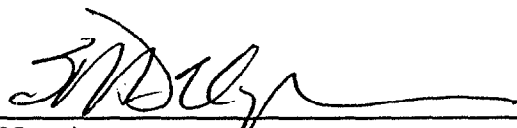
### **Description of the Selected Remedy**

The Remedial Investigation (RI) and the Risk Evaluation conducted for Site 5 support a no-action remedial alternative. The RI and Risk Evaluation addressed all media at the site, and therefore, no other actions will be considered for Site 5.


### **Declaration**

The no-action decision is based upon the fact that the polychlorinated biphenyl (PCB) contamination at WPNSTA Yorktown Site 5 was found in small quantities with estimated risks within the USEPA's target risk range. The selected remedy is protective of human health and the environment. Contaminant levels detected in the media at the site were found to present minimal risk to human health and the environment. A five-year review will not be necessary for this site.

DECLARATION FOR THE RECORD OF DECISION  
REMEDIAL ALTERNATIVE SELECTION

  
\_\_\_\_\_  
(Name)  
S.W. DELAPLANE, CAPT, USN  
Commanding Officer  
Naval Weapons Station

9/1/94  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
(Name)  
*for* PETER H. KOSTMAYER  
Regional Administrator  
USEPA Region III

9.29.94  
\_\_\_\_\_  
Date

## DECISION SUMMARY

### 1.0 INTRODUCTION

On October 15, 1992, WPNSTA Yorktown was included on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL). The Department of the Navy (DoN) has been granted the authority to be the lead agency at WPNSTA Yorktown under Executive Order 12580 and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Title II. The United States Environmental Protection Agency (USEPA) and the Commonwealth of Virginia have authority at WPNSTA Yorktown as support agencies. USEPA Region III, the Commonwealth of Virginia, and the DoN are in the process of finalizing a Federal Facilities Agreement (FFA) for WPNSTA Yorktown. The primary purpose of the FFA is to ensure that environmental impacts associated with past disposal activities at WPNSTA Yorktown are thoroughly investigated, and appropriate CERCLA and Resource Conservation and Recovery Act (RCRA) corrective action alternatives are developed and implemented to protect public health and the environment.

A CERCLA remedial action is often divided into Operable Units. As defined in the National Oil and Hazardous Substance Contingency Plan (NCP), an "Operable Unit means a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site." This Record of Decision (ROD) presents a determination that no further remedial action is necessary to protect human health and the environment at Operable Unit No. I (OU I), which consists of Site 5, the Surplus Transformer Storage Area located at Naval Weapons Station, Yorktown, Virginia (WPNSTA Yorktown). This ROD has been prepared to summarize the remedial alternative selection process and to present the selected remedial alternatives. The no-action decision at Site 5 is the first of several potential discrete actions at WPNSTA Yorktown;



hence, Site 5 has been designated OU I. The no-action decision is the final action for OU I. Other operable units will be defined by separate investigations.

The no-action decision is based on a recently completed Round One Remedial Investigation (RI) (Baker/Weston, 1993) and Site 5 Risk Evaluation Report (Baker, 1993). In the Risk Evaluation Report, it was determined that Site 5 soils posed no current or future potential, unacceptable human health risks and that site-associated contamination has not affected underlying groundwater quality. Additionally, the relatively small size of Site 5 and its distance from critical environmental habitats preclude significant effects on the surrounding ecology. Therefore, the conditions at Site 5 do not require further action to be protective of human health and the environment.

As stated previously, OU I has been the subject of an RI. A feasibility study (FS), which normally develops and examines remedial action alternatives for a site, will not be performed at Site 5 since the results of the RI and Risk Evaluation indicate that no remedial action is required at the site.

## **2.0 SITE NAME, LOCATION, AND DESCRIPTION**

WPNSTA Yorktown is a 10,624 acre installation located on the Virginia Peninsula in York and James City Counties and the City of Newport News (Figure 2-1). The installation is bounded on the northwest by the Naval Supply Center Cheatham Annex, the Virginia Emergency Fuel Farm and the future community of Wittaker's Mill; on the northeast by the York River and the Colonial National Historic Parkway; on the southwest by Route 143 and Interstate 64; and on the southeast by Route 238 and the community of Lackey.

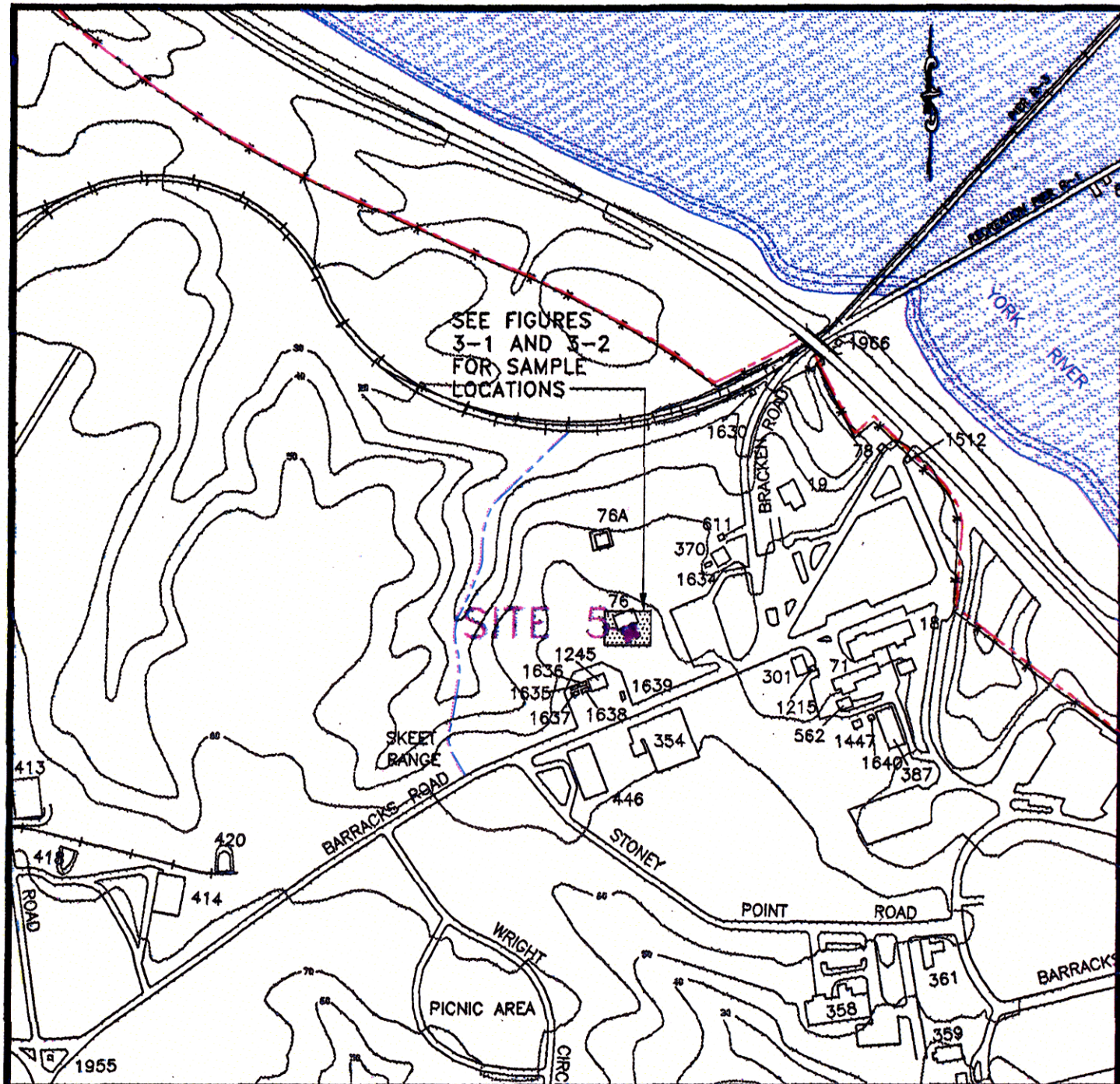
WPNSTA Yorktown, originally named the U.S. Mine Depot, was established in 1918 to support the laying of mines in the North Sea during World War I. For twenty years after World War I, the depot received, reclaimed, stored, and issued mines, depth charges, and related materials. During World War II, the facility was expanded to include three additional trinitrotoluene loading plants and torpedo overhaul facilities. A research and development laboratory for experimentation with high explosives was established in 1944, and a quality evaluation laboratory was added in 1947 to monitor the design and development of advanced underwater weapons. On August 7, 1959, the Depot was redesignated as the U.S. Naval Weapons Station. The primary mission of WPNSTA Yorktown is to provide ordnance, technical support, and related services to sustain the war-fighting capability of the armed forces in support of national military strategy.

OU I, Site 5, Surplus Transformer Storage Area, is located near Barracks Road in the northeastern portion of the facility adjacent to the south end of Building 76. Building 76 was constructed in 1922 and has housed a standby electrical generator since its completion. Use of the property at OU I before Building 76 was constructed is unknown. The OU I is approximately 1,000 square feet in size and is fenced and covered with gravel. Figure 2-2 shows the location of Site 5 and its proximity to Building 76. OU I was used to store surplus polychlorinated biphenyl (PCB)-containing electrical transformers from 1940 to 1981. After 1981, only non-leaking transformers were stored at this location. Currently, no transformers are stored at the site.









400 0 200 400  
1 inch = 400 ft.



- BOUNDARY
- DRAINAGE
- EDGE OF PAVEMENT
- MARSH
- RAILROAD
- FENCE
- STRUCTURE
- REMEDIAL INVESTIGATION SITE

20830280

**FIGURE 2-2**  
**LOCATION OF SITE 5**  
**SURPLUS TRANSFORMER STORAGE AREA**

NAVAL WEAPONS STATION

YORKTOWN, VIRGINIA

This study area is the first operable unit located within WPNSTA Yorktown. Separate investigations are being conducted to define other operable units. All media at the site are represented by the operable unit.

### 3.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

An estimated 300 pounds of PCB-containing fluid leaked from transformers stored at OU I over time. A cleanup effort conducted under the direction of the Navy in December 1982 included the removal of contaminated soils. The amount of soil removed from the site is not known. No State or Federal involvement with the removal action or any other action at OU I has been documented.

The Initial Assessment Study (IAS) conducted at WPNSTA Yorktown (C. C. Johnson & Associates, Inc., and CH2M Hill, 1984) states that PCB 1260 was detected in a soil sample obtained in the vicinity of Building 76. The exact location of the soil sample is unknown. The purpose of the IAS was to identify areas of sufficient threat to human health and/or the environment to warrant additional investigation. Site 5 was one of the 15 sites recommended for further study from this evaluation. Following this recommendation, environmental data were collected during the first round of sampling, and results were presented in the Round One Confirmation Study Report (Dames and Moore, June 1986). A second round of sampling was conducted during the investigation, but OU I was not included (Dames and Moore, June 1988). In July 1991, a RI Interim Report (Versar, 1991) was submitted, which combined and summarized the data from the two Confirmation Study Reports.

During the Round One Confirmation Study (Confirmation Study), ten soil samples were collected and analyzed for all PCB congeners and dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD]) at OU I. These data are presented on Table 3-1 and the sampling locations are presented in Figure 3-1. Only one PCB congener, Aroclor-1260, was detected in four of the ten samples collected. The detected results ranged from 242 to 1,920 micrograms per kilogram ( $\mu\text{g/kg}$ ). TCDD was not detected in any of the soil samples.

In 1992, additional investigations were conducted at WPNSTA Yorktown. The results of these sampling efforts are presented in the Round One RI Report (Baker/Weston, 1993). During the investigation at OU I, 24 soil samples were collected. Of these soil samples, 16 were collected at depths of 0 to 12 inches, including two duplicate samples; six were collected at depths of 12 to 24 inches; and two were obtained from a 10-foot boring. The two boring samples were collected from 0 to 12 inches and from 9 to 10 feet. The soil boring was located in the vicinity of the highest

**TABLE 3-1**  
**SOIL ANALYTICAL RESULTS OF PREVIOUS INVESTIGATIONS AT SITE 5**  
**NAVAL WEAPONS STATION YORKTOWN**  
**YORKTOWN, VIRGINIA**

	Sample No.									
	5S01 (µg/kg)	5S02 (µg/kg)	5S03 (µg/kg)	5S04 (µg/kg)	5S05 (µg/kg)	5S06 (µg/kg)	5S07 (µg/kg)	5S08 (µg/kg)	5S09 (µg/kg)	5S010 (µg/kg)
Aroclor-1016	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1221	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1232	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1242	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1248	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1254	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor-1260	<10	<10	<10	550	<10	466	<10	242	<10	1920
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	<50	<50	*	*	<50	<50	<50	<50	<50	<50

Notes: <10 - Not detected at or above the detection limit of 10 µg/Kg.

\* - Interference

Source: Versar, 1991

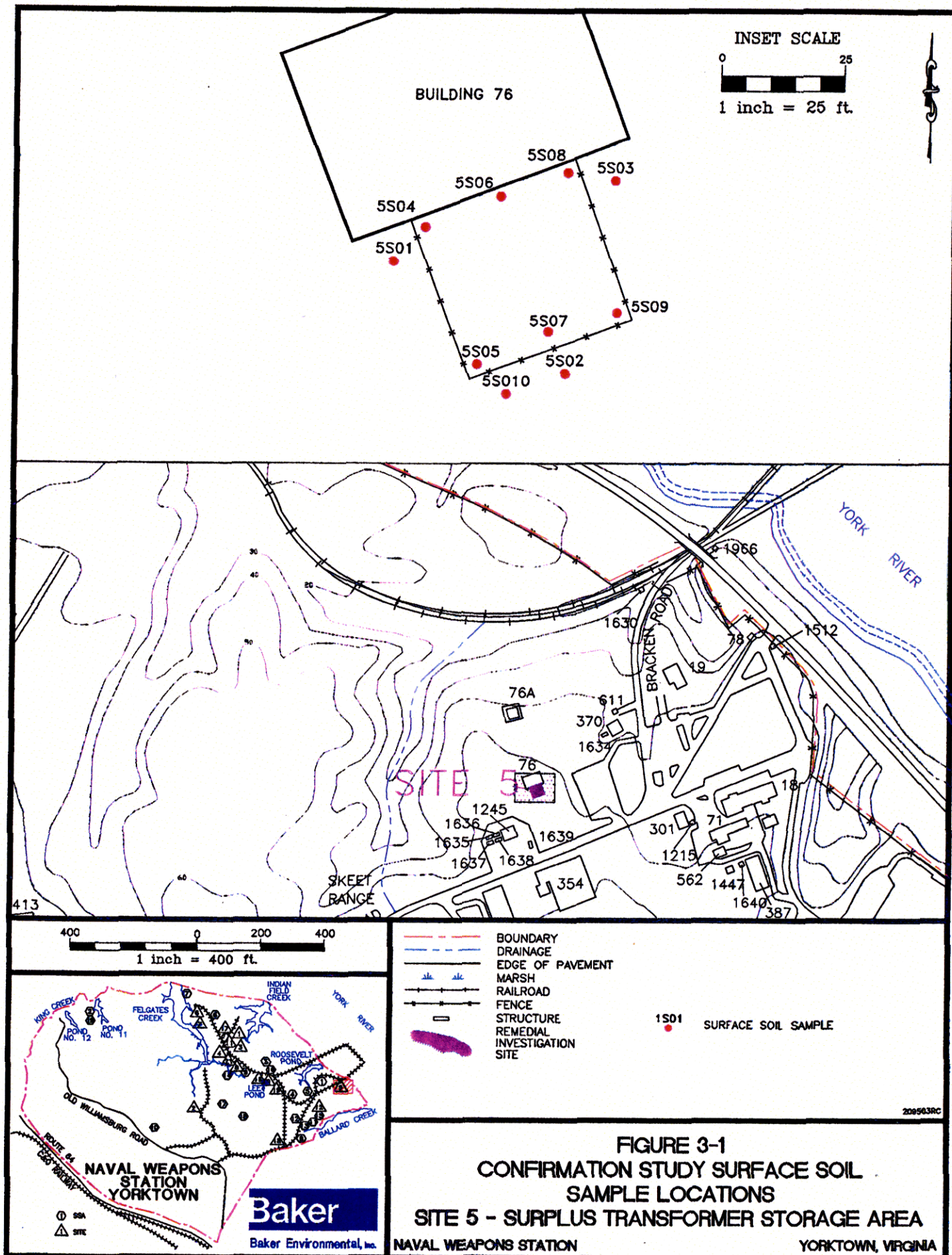
PCB value detected during the Confirmation Study. Additionally, four concrete chip samples were collected from the concrete pads upon which the transformers had been stored, and one groundwater sample was collected using a HydroPunch™, also at the location of the highest value detected during the Confirmation Study. The approximate locations of these samples relative to Building 76 are presented in Figure 3-2. These samples were analyzed for all PCB congeners. Table 3-2 presents the results of this soil sampling effort.

Aroclor-1260 was the only PCB congener detected; this Aroclor was detected in 17 soil samples. Concentrations detected in these soil samples ranged from 16 to 1,400 µg/kg. In only one soil sample (5S04, depth of 0 to 12 inches, and concentration of 1,400 µg/kg) was Aroclor-1260 detected at a concentration slightly greater than the Toxic Substances Control Act (TSCA) “clean soil” concentration of 1,000 µg/kg. All the other detected values were below 1,000 µg/kg. PCBs were not detected in either of the samples from the soil boring. Detectable concentrations of Aroclor-1260 were reported in the concrete chip samples, but the levels were lower than those detected in the soils. Groundwater samples did not display detectable concentrations of PCBs.

The concrete pads have been eliminated from further consideration under the remedial action because Aroclor-1260 was only detected in concrete samples at low levels and because potential exposure to soils is more likely than potential exposure to contact with concrete. Exposure to soils can occur by the inhalation of fugitive dusts, ingestion, and dermal contact. Exposure to concrete would likely be limited to dermal contact under current and future land use scenarios. Groundwater also has been eliminated from further consideration because PCBs were not detected.

The Risk Evaluation only considered all available OU I analytical data collected. Only the most recent data (generated during the Round One RI) were used in the quantitative evaluation of risk. Data collected prior to the Round One RI may not have undergone data validation, therefore, its quality and usability for risk assessment purposes is questionable. The PCB congener, Aroclor-1260, detected during the Round One RI, was identified in only one sample above the TSCA “clean soil” concentration of 1,000 µg/kg. After the Risk Evaluation was conducted, it was determined that the concentration of Aroclor-1260 does not present a significant risk to human health or the environment. Based on the analytical data, no source areas of contamination have been identified at Site 5.







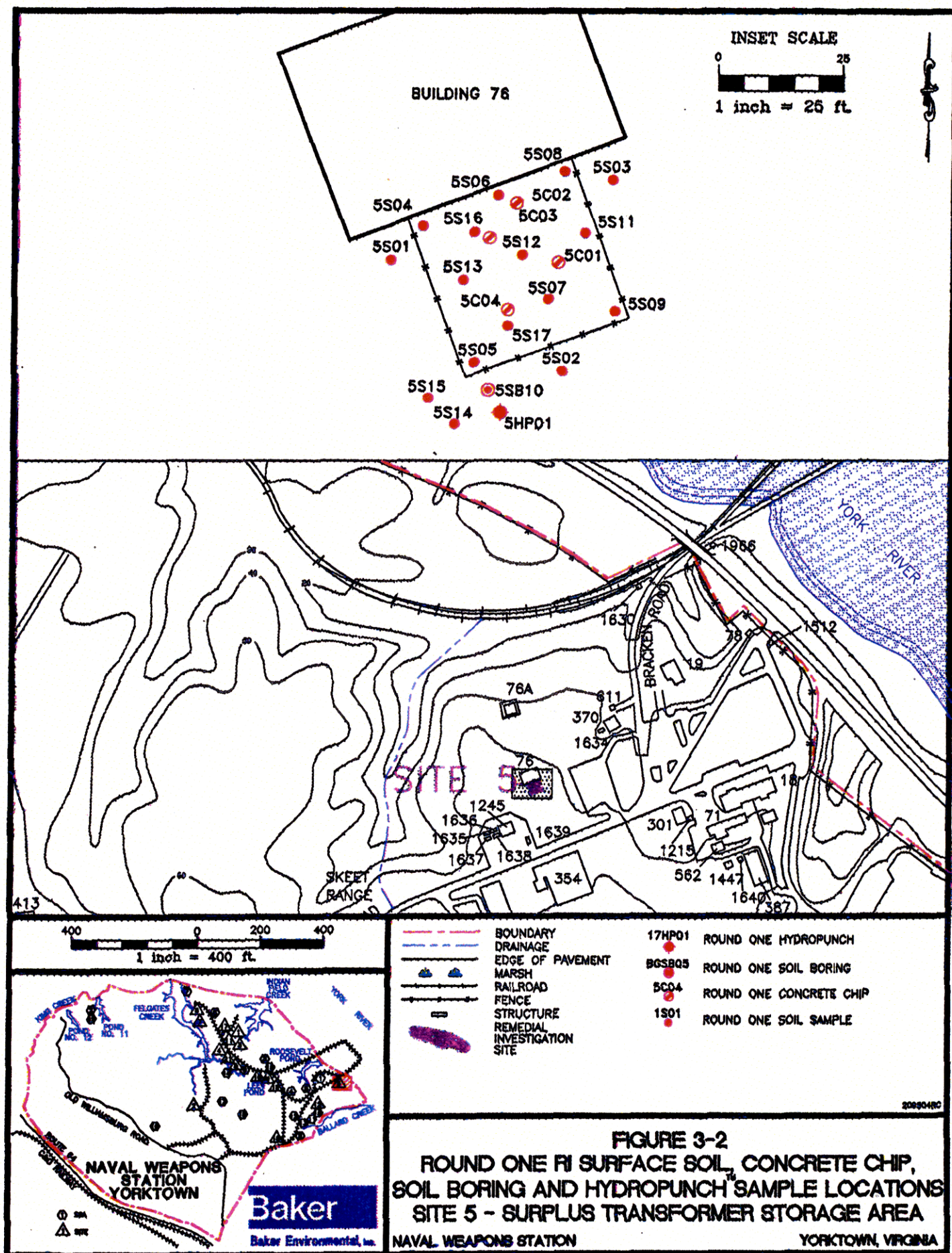


TABLE 3-2

**SOIL ANALYTICAL RESULTS OF ROUND ONE REMEDIAL INVESTIGATION AT SITE 5  
NAVAL WEAPONS STATION YORKTOWN  
YORKTOWN, VIRGINIA**

**Surface Soil Samples**

Sample No.	Aroclor-1260 ( $\mu\text{g/kg}$ )
5S01-001	ND
5S02-001	ND
5S03-001	36J
5S04-001	1,400
5S04-002	54
5S05-001	36
5S06-001	1,000
5S06-002	950
5S07-001	34J
5S08-001	170J
5S08-002	16J
5S09-001	230J
5S09-101	150J
5S11-001	400J
5S11-002	ND
5S12-001	380
5S12-002	33J
5S13-001	570
5S13-002	17J
5S13-101	380
5S14-001	ND
5S15-001	ND
5S16-001	440J
5S17-001	70

**Concrete Samples**

Sample No.	Aroclor-1260 ( $\mu\text{g/kg}$ )
5C01-001	41J
5C02-001	ND
5C03-001	ND
5C04-001	12J

**Soil Boring Samples**

Sample No.	Aroclor-1260 ( $\mu\text{g/kg}$ )
5SB10-001	ND
5SB10-002	ND

**HydroPunch™ Samples**

Sample No.	Aroclor-1260 ( $\mu\text{g/kg}$ )
5HP10	ND

J = Estimated Value

ND = None Detected

-001 = 0-12 inch sample

-002 = 12-24 inch sample

-101 = Duplicate 0-12 inch sample

Source: Baker/Weston, Round One RI Report,  
July 1993

#### 4.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Risk Evaluation Report and Proposed Remedial Action Plan (PRAP) for OU I were released to the public on May 31, 1994, and June 5, 1994, respectively. These two documents are included in the Administrative Record file and were made available for public review at the following locations:

WPNSTA Library, Building 705  
(804) 887-4720  
Naval Weapons Station  
Yorktown, VA 23691  
Hours: Mon & Thurs 8-6  
Tues & Wed 8-8  
Fri & Sat 9-5

Jamestown-Williamsburg Public Library  
(804) 229-7326  
515 Scotland Street  
Williamsburg, VA 23186  
Hours: Mon thru Thurs 10-9  
Sat 10-5  
Sun 1-5

York County Public Library  
(804) 890-3377  
8500 George Washington Highway  
Yorktown, VA 23692  
Hours: Mon thru Thurs 10-9  
Fri 10-6  
Sat 10-5  
Sun 1-5

Newport News City Public Library  
(804) 247-8506  
Griffon Branch  
366 Deshazor Drive  
Newport News, VA 23602  
Hours: Mon thru Thurs 9-9  
Fri & Sat 9-6  
Sun 1-5

The notice of availability of the Risk Evaluation and the PRAP documents was published in The Daily Press on June 5, 1994. A public comment period was held from June 5 through July 20, 1994. In addition, a public meeting was held on June 29, 1994 to present the PRAP for Site 5 and to answer questions and receive public comments. The public meeting minutes have been transcribed and a copy of the transcript is available to the public at the aforementioned libraries. A Responsiveness Summary, included as part of this ROD, has been prepared to respond to the significant comments, criticisms, and new relevant information received during the comment period. Upon signing the ROD, WPNSTA Yorktown and DoN will publish a notice of availability of this ROD in The Daily Press, and place the ROD in the Administrative Record located in the libraries mentioned above.

## **5.0 SCOPE AND ROLE OF THE OPERABLE UNIT RESPONSE ACTION**

The proposed remedial action identified in this plan for OU I is the No Action Alternative. Operable units were established for WPNSTA Yorktown based primarily on geographic locality, types of contaminants, contaminated media, and potential future remediation activities. OU I was so designated because of its location with respect to other Installation Restoration Program (IRP) sites, historical practices, and the limited number of chemicals of potential concern detected in environmental media. The no-action decision at OU I is the first of several discrete actions at WPNSTA Yorktown. Other OUs will be addressed by separate investigations.

A soil removal action was conducted by the Naval Weapons Station at OU I in 1982, however, the results of the action and the volume of soil removed were not documented. Subsequent investigations indicate that the removal action was effective in reducing soil PCB concentrations to levels at or below the TSCA definition of "clean soils" (i.e., containing less than 1,000 µg/kg total PCBs) for nonrestricted access areas. Furthermore, deeper subsurface soils and shallow groundwater have not been affected by contamination associated with past activities at OU I. PCBs in concrete were detected at low levels, but because of the relative immobility of PCBs, concrete should pose a minimal threat to human health and the environment. Soil and groundwater should be minimally affected in the future if no further remedial action is taken. Therefore, OU I presents a minimal risk to human health and the environment without further action.

## **6.0 SITE CHARACTERISTICS**

A brief overview of the site characteristics related to OU I is presented below. Site characteristics include land use, meteorology, surface features, geology and hydrogeology, and ecology.

### **6.1 Land Use**

With respect to land use, there are no housing areas near or within the boundaries of Site 5. The site is 1,000 square feet in area and is surrounded by a fence. OU I is located near Barracks Road in the northeastern portion of the facility and is adjacent to the south end of Building 76. Building 76 was constructed in 1922 and has housed a standby electrical generator since its completion. OU I and Building 76 are not currently being used. A gas station and a gymnasium are situated just south of the site.

### **6.2 Meteorology**

The climate of the Virginia Peninsula is maritime and is influenced by the moderating effects of the Atlantic Ocean. WPNSTA Yorktown's average annual precipitation is 44.15 inches, with the summer months being the wettest and the winter months being the driest. Average monthly temperatures in the area range from approximately 38.8 degrees Fahrenheit (°F) in January to 77.4°F in July. Winds are highly variable in the area of WPNSTA Yorktown. Prevailing winds are usually from the south-southwest, but north-northeasterly winds are common in winter months.

### **6.3 Topography**

The topography of OU I is predominately flat. The ground surface elevation is 55.8 feet above mean sea level (msl) based on information from previous soil boring logs.

The terrain around OU I indicates that surface water drainage would be toward the York River. The site is approximately 1,100 feet from the York River and 12 miles northwest of the York River's outlet into the Chesapeake Bay.

#### **6.4 Geology and Hydrogeology**

With respect to geology, OU I is underlain by unconsolidated sediments of the Quaternary system. The soils have been classified as belonging to the Dogue, Pamunky, and Uchee Association. The soils of this association were deposited on stream terraces and are deep, moderately-well and well-drained loam and sandy loam soils that have clayey, loamy, and sandy loam subsoils (Hodges, et al., 1982).

There is a shallow aquifer system at WPNSTA Yorktown which consists of the Columbia aquifer and the Cornwallis Cave aquifer. They are separated by the Cornwallis Cave confining unit. Groundwater flow is inferred to be toward the northeast in the general direction of the York River. During drilling activities, the depth to groundwater was determined to be approximately 10 feet below ground surface (bgs) to the Columbia aquifer and approximately 25 feet bgs to the Cornwallis Cave aquifer.

#### **6.5 Ecology**

Aroclor-1260 is the chemical of potential concern at OU I and was detected primarily in soil samples obtained from within the fenced area. The source of Aroclor-1260 in OU I Site 5 soils was the presence of electrical transformers stored at the site until 1981. The maximum concentration of Aroclor-1260 detected during the Round One RI was 1,400  $\mu\text{g/kg}$ . With respect to ecology, OU I has no wetlands, any protected or endangered species, nor any other sensitive environments identified within the site boundaries.

## 7.0 SUMMARY OF SITE RISKS

A Risk Evaluation was conducted for OU I subsequent to the Round One RI. The Risk Evaluation considered all available site data, but focused quantitatively on the most recent PCB data collected in 1992. The only congener of PCBs detected, Aroclor-1260, was selected as the chemical of potential concern (COPC) because of site history and its prevalence in Site 5 soils.

### 7.1 Fate and Transport

The term PCB refers to a mixture of a variety of individually chlorinated biphenyl isomers, each consisting of two "aromatic" six carbon rings and up to ten chlorine atoms. Mixtures of these isomers are known by the commercial designation Aroclor, which is followed by a four digit number. The first two numbers indicate the number of carbon atoms present in the parent structure (i.e., 12 = biphenyl). The last two numbers indicate the approximate weight percent of chlorine in the mixture (i.e., 60 = 60 percent chlorine by weight). PCBs are environmentally-persistent, man-made chemicals that were used as insulating materials in electrical transformers and as lubricants. Because of their persistence and toxicity in the environment, their manufacture was discontinued in the United States in 1977. However, PCB equipment manufactured before 1977 is currently in use and regulated by the United States Environmental Protection Agency (USEPA).

PCBs are very stable chemically and tend to persist in the environment. Persistence and bioaccumulation in living organisms occur due to the high lipophilicity (i.e., lipid and/or fat-loving characteristics) of these compounds.

Experimental data suggest that PCBs are strongly adsorbed to soils. Materials that are strongly adsorbed to soils are considered to have a low mobility index (MI). For PCBs, water solubility and vapor pressure directly impact MIs. Water solubility and vapor pressure of PCBs decrease with increasing chlorine content. MIs for PCBs range from immobile (Aroclor-1232) to very immobile (Aroclor-1260). Thus, at OU I, the PCB congener detected (i.e., Aroclor-1260) would not be expected to migrate from the soils in which they are currently present.



The overall widespread distribution of PCBs in the environment suggests that the major route of constituent transport is through the atmosphere by way of particulate matter. Degradation of PCBs in the environment is also dependent on the degree of chlorination. In general, the more chlorinated the PCB, the more environmentally persistent. Factors which determine the biodegradability of PCBs include the amount of chlorination, concentration of PCBs, types of microbial populations, viability of the microbes, availability of nutrients, and temperature.

## **7.2     Toxicity and Exposure Assessment**

Inhalation and dermal routes are the main routes of exposure to PCBs in occupational settings; however, for the general population, the oral route is the major route of exposure. It is thought that PCBs will initially accumulate in the liver, due to the organ's high perfusion rate; however, there are additional indications that the skin and thyroid may also be target organs, which can contribute to the chronic toxicity. There is also evidence that links carcinogenicity to PCB exposure in rats and mice.

Potential ecological effects associated with the presence of PCBs in the environment are related to their hydrophobic character. PCBs can partition significantly from water to aquatic organisms such as fish; thus, there is evidence that PCBs will biomagnify in the food chain to higher trophic levels of aquatic organisms and in several species of fish-consuming predators. As such, the relationship between the dose of a compound (i.e., amount to which an individual or population is potentially exposed) and the potential for adverse effects resulting from exposure to that dose, is an important component of the toxicological evaluation; standard reference doses (RfDs) and/or carcinogenic slope factors (CSFs) have been developed for a variety of chemicals, including PCBs, to assess this dose-response relationship.

An RfD is developed for chronic and/or subchronic human exposure to chemicals and is based solely on the non-carcinogenic effects of chemical substances. It is defined as an estimate of the daily exposure level for the human population, including sensitive subpopulations (i.e., children and the elderly), at which no appreciable risk of adverse effects is likely to occur during a lifetime. An RfD value is not currently available for PCBs.

CSFs are used to estimate an upper-bound lifetime probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen (USEPA, 1989). This factor is derived through an assumed low-dosage, linear, multi-stage model and an extrapolation from high to low dose responses determined from animal studies. An oral CSF value of  $7.7 \text{ (mg/kg-day)}^{-1}$  for PCBs has been published in the USEPA's Integrated Risk Information System (IRIS, 1994) database and is the toxicity value used in this evaluation.

The slope factor is also accompanied by a weight-of-evidence classification that designates the strength of the evidence that a particular chemical is a potential human carcinogen. The USEPA weight-of-evidence classification for PCBs is Group B - probable human carcinogen based on the evidence of liver cancer in three strains of rats and two strains of mice. However, studies on exposed human populations suggest that PCBs are, at worst, very weak initiators of carcinogenesis. It is, therefore, important to note that cancer in rodents does not indicate clear predictive evidence of PCB carcinogenicity in humans (Safe, et al., 1987).

The primary potential human exposure pathway considered in the Risk Evaluation for OU I was the incidental ingestion of contaminated soils. Evaluating the ingestion of soils at OU I as a potential human exposure pathway is a conservative approach, given the size and relative inaccessibility (i.e., the site is fenced) of the site. For the purposes of the Risk Evaluation, it was assumed that soil ingestion would occur by incidental oral contact with hands, arms, or food items to which soil particles have adhered. Station personnel, future construction workers, and future residents were considered to be the populations most at risk.

### **7.3 Risk Characterization**

The Aroclor-1260 concentrations detected in soil samples during the Round One RI were compared to USEPA Region III Risk Based Concentrations (RBCs) for Aroclor-1260 considering commercial/industrial and residential property use. Because RBCs are derived from standard USEPA risk algorithms, worst case Incremental Cancer Risks (ICRs) and Hazard Indices (HIs) were derived by dividing the maximum detected concentration of Aroclor-1260 by its corresponding RBC value. The commercial/industrial RBC value represents the current potential exposure to Station employees who may contact affected soils during the course of their daily work activities. The use

of the residential RBC value represents the future potential development of the property. Corresponding ICR values for commercial/industrial and future residential property use were  $4 \times 10^{-6}$  and  $2 \times 10^{-5}$ , respectively. These values fall within USEPA's target risk range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  which the USEPA generally considers to be "acceptable".

#### **7.4 Conclusion**

Based on the results of the Risk Evaluation, known concentrations of Aroclor-1260 in soils do not pose unacceptable human health risks to even the most potentially sensitive exposed individuals, which are future residents. Based on current data, neither deeper subsurface soils nor groundwater have been impacted by the release of PCB-containing fluids at OU I. Furthermore, significant ecological effects are not expected to occur because of the limited size of the site, its distance from critical habitats, and the relative immobility of PCBs. Therefore, further response actions at OU I are deemed unnecessary to protect human health and the environment.

## **8.0 DESCRIPTION OF THE "NO ACTION" ALTERNATIVE**

From an analysis of all available and pertinent information for OU I, it is concluded that remedial actions are not necessary for the protection of human health or the environment. Therefore, the selected alternative for OU I is the No Action Alternative. This alternative will consist of leaving the site intact. No additional sampling or monitoring will be necessary because no future potential threats to human health or the environment exist as a result of the prior removal action, the current low levels of residual contamination, and the acceptable levels of risk to both human health and the environment. In a June 21, 1993 meeting, representatives of the USEPA and the Commonwealth of Virginia were apprised of the proposed No Action Alternative for OU I and concur with this decision. This remedial alternative will have no associated costs.

## **9.0      RESPONSIVENESS SUMMARY**

The purpose of this Responsiveness Summary is to provide the public with a summary of citizen comments, concerns, and questions about OU I, Site 5, Surplus Transformer Storage Area at WPNSTA Yorktown. A public meeting was held on June 29, 1994, to present the Proposed Plan and answer questions and receive comments. No written public comments were received during the June 5, through July 20, 1994 comment period.

The Responsiveness Summary is divided into the following sections:

- Selected newspaper notices announcing dates of the public comment period and location and time of the public meeting
- Public meeting attendance roster
- Panel of experts
- Independent Sampling Investigation

All comments and concerns summarized in this document have been considered by USEPA in making a decision regarding the selection of the No Action alternative at OU I. In addition to public comments and concerns, USEPA has undertaken an independent sampling investigation to confirm the extent of potential contamination at the site. Results of the independent sampling investigation are presented herein.

## 9.1 Selected Newspaper Notices



**THE U.S. DEPARTMENT OF THE NAVY INVITES COMMENT AND PUBLIC MEETING PARTICIPATION ON THE "NO ACTION ALTERNATIVE" PROPOSED PLAN FOR THE INSTALLATION RESTORATION (IR) PROGRAM SITE 5, OPERABLE UNIT I, THE SURPLUS TRANSFORMER STORAGE AREA AT THE NAVAL WEAPONS STATION YORKTOWN**

In accordance with the Department of the Navy IR Program, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), the Department of the Navy invites public comment on the "No Action Alternative" Proposed Plan at IR Site 5, Operable Unit I, the Surplus Transformer Storage Area at the Naval Weapons Station Yorktown. The site does not pose any adverse impacts to human health or

to the environment based on previous studies, therefore, no additional study or cleanup is proposed.

A public information meeting will be held at the York County High School, 9300 George Washington Highway, Yorktown at 7:00 PM on Wednesday, June 29, 1994, to present the proposed "No Action Alternative" plan to the community. Representatives from the Navy and its consultants will be available to respond to questions at this time.

The Navy will hold a 45-day public comment period from June 5 through July 20, 1994. The comment period can be extended by an additional 15 days, upon timely receipt of such a request from the public. During the public comment period, the public is invited to review the "No Action Alternative," presented in the Final Proposed Remedial Action Plan (PRAP). The PRAP and the Administrative Record index are available for public review at each of the following information repositories during normal business hours:

Naval Weapons Station Yorktown Library, Building 705 (804) 887-4720	Newport News City Public Library (804) 247-8506 Grissom Branch 366 DeShazor Drive Newport News, VA 23602	Gloucester Public Library (804) 693-2998 P.O. Box 367 Main Street Gloucester, VA 23601
Naval Weapons Station Yorktown, VA 23691	Jamestown-Williamsburg Public Library (804) 229-7326 515 Scotland Street Williamsburg, VA 23186	The York County Public Library (804) 898-0077 8500 George Washington Highway Yorktown, VA 23692

Interested citizens may provide written comments on the "No Action Alternative" from June 5, 1994 through July 20, 1994 to:

Mr. Thomas Black, Public Affairs Officer  
Naval Weapons Station Yorktown (Code P)  
P.O. Drawer 160  
Yorktown, VA 23691-0160  
Phone: (804) 887-4444 Fax: (804) 887-4596



### **Change of Naval Weapons Station Yorktown Public Meeting Time and Location**

The Department of the Navy announces a change of location and time for the June 29, 1994 public information meeting. The meeting was advertised on page 3 of the June 5, 1994, Daily Press as being held at the York County High School at 7:00 PM. The meeting will be held at the York County Library meeting room located on George Washington Highway. An open house will begin at 6:00 PM followed by a formal presentation at 7:00 PM. Representatives from the Navy, its consultants, and the U.S. Environmental Protection Agency will be available to respond to questions at this time. The Navy invites public comment on the "No Action Alternative" Proposed Plan at Site 5, Operable Unit I, the Surplus Transformer Storage Area at the Naval Weapons Station Yorktown. The site does not pose any adverse impacts to human health or to the environment based on previous studies, therefore, no additional study or cleanup is proposed. Interested citizens may provide written comments on the "No Action Alternative" from June 5, 1994 through July 20, 1994 to:

Mr. Thomas Black, Public Affairs Officer  
Naval Weapons Station Yorktown (Code P)  
P.O. Drawer 160

Yorktown, VA 23691-0160

Phone: (804) 887-4444 Fax: (804) 887-4596

**9.2     Public Meeting Attendance Roster**

**PUBLIC MEETING  
FOR  
PROPOSED REMEDIAL ACTION PLAN  
OPERABLE UNIT I  
SITE 5, SURPLUS TRANSFORMER STORAGE AREA  
JUNE 29, 1994  
YORK COUNTY PUBLIC LIBRARY 7:00 P.M.**

1.     Allen Simmons
2.     Jeffrey Harlow
3.     Lisa Ellis
4.     Valerie Walker
5.     Jennifer Loftin
6.     Rhonda Shanks
7.     Barry Moss
8.     Melissa C. Davidson
9.     Rich Hoff
10.    Brenda Norton
11.    Tom Black
12.    Robert Thomson
13.    Carolyn Neill



### **9.3     Panel of Experts**

Tom Black, Public Affairs Officer, WPNSTA Yorktown

Jennifer Loftin, Head, Solid Waste Division WPNSTA Yorktown

Valerie Walker, Environmental Protection Specialist, WPNSTA Yorktown

Jeff Harlow, Environmental Engineer, WPNSTA Yorktown

Brenda Norton, Navy Technical Representative and Remedial Project Manager, Naval Facilities Engineering Command, Atlantic Division

Robert Thomson, Remedial Project Manager, U.S. Environmental Protection Agency (EPA)

Lisa Ellis, Remedial Project Manager, Virginia Department of Environmental Quality

Rich Hoff, Risk Assessment Specialist, Baker Environmental

Melissa Davidson, Community Relations Specialist, Baker Environmental

#### **9.4 Independent Sampling Investigation**

Black and Veatch Waste Science, Inc. (June, 1994) was tasked by USEPA Region III to perform a limited Independent Sampling Investigation at OU I. A total of six soil samples (obtained from three sampling locations), three groundwater samples, and three sediment samples were taken and analyzed for target compound list (TCL) volatiles, semivolatiles, pesticides/PCBs, and target analyte list (TAL) inorganics according to the Contract Laboratory Program (CLP) Statement of Work (SOW).

Sample locations were selected considering historical data, the potential for overland drainage as a result of storm events and subsequent impacts on nearby surface waters (i.e., the drainage ditch and York River), sediments, and underlying shallow groundwater.

Analytical results for PCBs were consistent with the results obtained during the Round One RI. PCBs were not detected above quantitation limits in shallow HydroPunch™ groundwater samples or in sediment samples taken from the drainage ditch located to the northwest of OU I. A shallow (0 to 6") surface soil sample taken from location SS-2 (located in the vicinity of sample location 5502 presented on Figure 3-2) contained 48 µg/kg of PCB-1260. This concentration is lower than the corresponding USEPA Region III residential RBC value of 83 µg/kg. PCBs were not detected above their respective quantitation limits in any other surface or subsurface (18 to 24") soil sample.

## 10.0 REFERENCES

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Baker Environmental, Inc. and Roy F. Weston, Inc. 1993. Final Round One Remedial Investigation Report for Site 1-9, 11, 12, 16-19, and 21, Naval Weapons Station, Yorktown, Virginia.

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